WHAT IS CLAIMED IS:

1. A 1×N optical switch comprising:

a two-port optical switch connected to an input waveguide, and capable of continuously adjusting its optical output intensity from a first output to a second output;

a switch section including one or more two-port optical switches connected in cascade to the output(s) of said two-port optical switch, and having its outputs connected to N output waveguides, where N is an integer equal to or greater than three;

a plurality of gate optical switches, each of which is connected to one of the output waveguides and capable of continuously adjusting its optical output from transmission to interruption;

a plurality of switch driving power supply circuits for driving said two-port optical switches, said two-port optical switches being divided into groups, each of which includes only one two-port optical switch that is brought into conduction at a time, and the two-port optical switches in a same group sharing one of said switch driving power supply circuits;

a gate driving power supply circuit for driving said gate optical switches, all the gate optical switches sharing said gate driving power supply circuit; and

electrical digital switches, each of which is connected

to one of said two-port optical switches or said gate optical switches for interrupting a driving current from one of said driving power supply circuits.

2. A 1×N optical switch comprising:

a two-port optical switch connected to an input waveguide, and capable of continuously adjusting its optical output intensity from a first output to a second output;

a switch section including one or more two-port optical switches connected in cascade to the output(s) of said two-port optical switch, and having its outputs connected to N output waveguides, where N is an integer equal to or greater than three;

a plurality of gate optical switches, each of which is connected to one of the output waveguides and capable of continuously adjusting its optical output from transmission to interruption;

a switch driving power supply circuit for driving said two-port optical switches, all the two-port optical switches sharing said switch driving power supply circuit;

a gate driving power supply circuit for driving said gate optical switches, all the gate optical switches sharing said gate driving power supply circuit; and

electrical digital switches, each of which is connected to one of said two-port optical switches or said gate optical switches for interrupting a driving current from one of

said driving power supply circuits.

3. A 1×N optical switch comprising:

a two-port optical switch connected to an input waveguide, and capable of continuously adjusting its optical output intensity from a first output to a second output;

a switch section including one or more two-port optical switches connected in cascade to the output(s) of said two-port optical switch, and having its outputs connected to N output waveguides, where N is an integer equal to or greater than three;

a plurality of gate optical switches, each of which is connected to one of the output waveguides and capable of continuously adjusting its optical output from transmission to interruption;

a driving power supply circuit for driving said two-port optical switches and said gate optical switches, all the two-port optical switches and gate optical switches sharing said driving power supply circuit; and

electrical digital switches, each of which is connected to one of said two-port optical switches or said gate optical switches for interrupting a driving current from one of said driving power supply circuits.

4. The 1×N optical switch as claimed in claim 1, wherein power supply lines are shared which connect said two-port

optical switches to said switch driving power supply circuits shared, and wherein power supply lines are shared which connect said gate optical switches to said gate driving power supply circuit shared.

5. The 1×N optical switch as claimed in claim 2, wherein power supply lines are shared which connect said two-port optical switches to said switch driving power supply circuits shared, and wherein power supply lines are shared which connect said gate optical switches to said gate driving power supply circuit shared.

6. The 1×N optical switch as claimed in claim 3, wherein power supply lines are shared which connect said two-port optical switches and said gate optical switch to said driving power supply circuit shared.

7. The 1×N optical switch as claimed in claim 4, wherein said power supply lines are shared on an optical switch chip in which said switch section, said plurality of gate optical switches and said power supply lines are integrated.

8. The 1×N optical switch as claimed in claim 5, wherein said power supply lines are shared on an optical switch chip in which said switch section, said plurality of gate optical switches and said power supply lines are integrated.

9. The 1×N optical switch as claimed in claim 6, wherein said power supply lines are shared on an optical switch chip in which said switch section, said plurality of gate optical switches and said power supply lines are integrated.

10. The 1×N optical switch as claimed in claim 1, wherein each of said two-port optical switches has its first output connected to one of said output waveguides and its second output unconnected or connected to an input of one of other two-port optical switches to make said switch section a tap type arrangement.

11. The 1×N optical switch as claimed in claim 2, wherein each of said two-port optical switches has its first output connected to one of said output waveguides and its second output unconnected or connected to an input of one of other two-port optical switches to make said switch section a tap type arrangement.

12. The 1×N optical switch as claimed in claim 3, wherein each of said two-port optical switches has its first output connected to one of said output waveguides and its second output unconnected or connected to an input of one of other two-port optical switches to make said switch section a tap type arrangement.

13. The 1×N optical switch as claimed in claim 1, wherein

said two-port optical switches or said gate optical switches are each composed of a 2×2 optical switch having one of its input/output ports unconnected.

14. The 1×N optical switch as claimed in claim 2, wherein said two-port optical switches or said gate optical switches are each composed of a 2×2 optical switch having one of its input/output ports unconnected.

15. The 1×N optical switch as claimed in claim 3, wherein said two-port optical switches or said gate optical switches are each composed of a 2×2 optical switch having one of its input/output ports unconnected.

16. The 1×N optical switch as claimed in claim 1, wherein said two-port optical switches or said gate optical switches each consists of an optical switch using silica-based optical waveguides.

17. The 1×N optical switch as claimed in claim 2, wherein said two-port optical switches or said gate optical switches each consists of an optical switch using silica-based optical waveguides.

18. The 1×N optical switch as claimed in claim 3, wherein said two-port optical switches or said gate optical switches each consists of an optical switch using silica-based

optical waveguides.

19. An optical module comprising:

an optical waveguide circuit; and

a driving electronic circuit for providing said optical waveguide circuit with a refractive index variation to modify an output characteristic, wherein

said driving electronic circuit is mounted on a substrate of said optical waveguide circuit together with said optical waveguide circuit.

20. The optical module as claimed in claim 19, wherein said driving electronic circuit is mounted on the substrate of said optical waveguide circuit in the form of a bare chip.

21. The optical module as claimed in claim 19, wherein wiring from said driving electronic circuit is grouped and integrated on the substrate of said optical waveguide circuit.

22. The optical module as claimed in claim 20, wherein wiring from said driving electronic circuit is grouped and integrated on the substrate of said optical waveguide circuit.

23. The optical module as claimed in claim 19, wherein

said optical waveguide circuit consists of an optical switch.

24. The optical module as claimed in claim 20, wherein said optical waveguide circuit consists of an optical switch.

25. The optical module as claimed in claim 21, wherein said optical waveguide circuit consists of an optical switch.

26. The optical module as claimed in claim 22, wherein said optical waveguide circuit consists of an optical switch.

27. The optical module as claimed in claim 19, wherein said optical waveguide circuit consists of a variable optical attenuator.

28. The optical module as claimed in claim 20, wherein said optical waveguide circuit consists of a variable optical attenuator.

29. The optical module as claimed in claim 21, wherein said optical waveguide circuit consists of a variable optical attenuator.

30. The optical module as claimed in claim 22, wherein said optical waveguide circuit consists of a variable optical attenuator.

31. The optical module as claimed in claim 19, wherein said optical waveguide circuit consists of a silica-based optical waveguide circuit.

32. The optical module as claimed in claim 20, wherein said optical waveguide circuit consists of a silica-based optical waveguide circuit.

33. The optical module as claimed in claim 19, wherein

said optical waveguide circuit consists of a 1×N optical switch with one input and N outputs, where N is an integer equal to or greater than three, wherein

said 1×N optical switch comprises:

one input waveguide placed on the substrate of said optical waveguide circuit;

N output waveguides placed on the substrate of said optical waveguide circuit;

N gate optical switches, each of which is connected to one of said N output waveguides on the substrate of said optical waveguide circuit, for controlling passing of light; and

a plurality of 1×2 optical switches placed between said input waveguide and said gate optical switches, for

continuously switching its path in response to a level of an electrical signal from driving power supply circuit in said driving electronic circuit, and wherein

said plurality of 1×2 optical switches are divided into a plurality of groups, each of which is assigned one of said driving power supply circuits, and said optical module further comprises electrical digital switches incorporated into integrated circuits (ICs) for controlling levels of electrical signals supplied from said driving power supply circuits to said plurality of 1×2 optical switches.

34. The optical module as claimed in claim 33, wherein said integrated circuits (ICs) of said electrical digital switches mounts directly on the substrate of said optical waveguide circuit in the form of bare chips.

35. The optical module as claimed in claim 19, wherein said optical waveguide circuit consists of an optical matrix switch for linking mth input waveguide to ℓth output waveguide with an M×L optical cross-point switch, where M and L are an integer equal to or greater than 2, and m and ℓ satisfy relationships $1 \leq m \leq M$ and $1 \leq \ell \leq L$, respectively, wherein

said optical matrix switch comprises:

M input waveguides placed on the substrate of said optical waveguide circuit;

L output waveguides placed on the substrate of said

optical waveguide circuit; and

an M×L optical cross-point switch placed between said M input waveguides and said L output input waveguides on the substrate of said optical waveguide circuit, and consisting of a duplex type optical switch including 1×2 optical switches and 2×1 optical switches, each of which continuously switching its path in response to the level of the electrical signal fed from said driving electronic circuit, and wherein

said 1×2 optical switches and said 2×1 optical switches are divided into a plurality of groups, each of which is assigned one of driving power supply circuits in said driving electronic circuits, and said optical module further comprises electrical digital switches incorporated into integrated circuits (ICs) for controlling levels of electrical signals supplied from said driving power supply circuits to said 1×2 optical switches and to said 2×1 optical switches.

36. The optical module as claimed in claim 35, wherein

said integrated circuits (ICs) of said electrical digital switches mounts directly on the substrate of said optical waveguide circuit in the form of bare chips.